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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,178	01/24/2002	Kit S. Lam	8141/9886	5311

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EXAMINER	
EPPERSON, JON D	

ART UNIT	PAPER NUMBER
1639	

DATE MAILED: 11/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/057,178	LAM ET AL.	
	Examiner	Art Unit	
	Jon D. Epperson	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *16-20* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,12 and 15* is/are rejected.

7)☒ Claim(s) *10,11,13 and 14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 January 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/29/03, 12/13/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Application

1. Receipt is acknowledged of a Response to a Restriction Requirement, which was dated on July 22, 2005.

Status of the Claims

2. Claims 1-20 are pending in the present application.

3. Please note: Applicant's elected species (Subgroup 1 = protein extract from normal cells, Subgroup 2 = protein extract from cancer cells; Subgroup 3 = one-bead-one-compound peptide library; Subgroup 4 = biotinylation; Subgroup 5 = incubating with 5-bromo-4-chloro-3-indolyl-phosphate; Subgroup 6 = no immobilization; Subgroup 8 = dissecting microscope; Subgroup 9 = no label binder) was found in the art. Furthermore, Applicant's *specifically* elected species (Subgroup 7 = B-A/A on a pixel-by-pixel basis) was searched and was not found in the prior art. Thus, the search was expanded to non-elected species, which *were* found in the prior art, see rejections below. Also, see MPEP § 803.02 (emphasis added):

> On the other hand, should no prior art be found that anticipates or renders obvious the elected species, the search of the Markush-type claim will be extended. If prior art is then found that anticipates or renders obvious the Markush-type claim with respect to a nonelected species, the Markush-type claim shall be rejected and claims to the nonelected species held withdrawn from further consideration. ***The prior art search, however, will not be extended unnecessarily to cover all nonelected species.*** Should applicant, in response to this rejection of the Markush-type claim, overcome the rejection, as by amending the Markush-type claim to exclude the species anticipated or rendered obvious by the prior art, the amended Markush-type claim will be reexamined. The prior art search will be extended to the extent necessary to determine patentability of the Markush-type claim. In the event prior art is found during the reexamination that anticipates or renders obvious the amended Markush-type claim, the claim will be rejected and the action made final. Amendments submitted after the final rejection further restricting the scope of the claim may be denied entry.

4. Claims 16-20 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species (see below i.e., ***Response to Restriction and/or Election of Species***).

5. Therefore, claims 1-15 are examined on the merits in this action.

Response to Restriction and/or Election of Species

6. Applicant's election of species is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election of species has also been treated as an election without traverse (MPEP § 818.03(a) and/ or 37 CFR 1.111(b)).

7. As a result, the restriction requirement and/or election of species is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

8. The information disclosure statement filed December 23, 2003, fails, in part, to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because two publications cited therein, numbered 4 and 6, lack publication dates, a necessary element for consideration. While the other patent and other publications cited therein, and supplied, therewith, have been considered as to the merits, these three publications have not. Applicant is advised that the date of any re-submission of these citations contained in this information disclosure statement or the submission of the missing element – their publication dates – will be the date of submission for

purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPE § 609 C(1).

9. The references listed on applicant's PTO-1449 form have been considered by the Examiner. A copy of the form is attached to this Office Action (5/29/03, 12/13/02).

Specification

10. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Objections to the Claims

11. Claim(s) 15 is/are objected to because of the following informalities:

Claim 15 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 12. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Here, the only difference between the claims represents intended use language that occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand

alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claims Rejections - 35 U.S.C. 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. **Claim 14** recites the limitation "the formula (B-A)/A" in the second line. There is insufficient antecedent basis for this limitation in the claim. Therefore, claim 14 and all dependent claims are rejected under 35 USC 112, second paragraph. The Examiner recommends the use of "a formula (B-A)/A" instead.

Claims Rejections - 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 2, 4, 7-9, 12 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Buettner (EP 0742438 A2) (Date of Patent is **November 13, 1996**) (5/29/03 IDS).

For ***claims 1, 2, 12 and 15***, Buettner (see entire document) discloses a method for screening of combinatorial peptide libraries for selection of peptide ligand useful in affinity purification of target proteins (e.g., see Buettner, abstract), which anticipates the claimed invention. For example, Buettner discloses labeling a first mixture of molecules and a target mixture of molecules (e.g., see figure 1 C wherein Ab is labeled with Enz for "first mixture" of molecules; see also figure 1E wherein Ab is again labeled with Enz for "target mixture" of molecules that contains the "TP" target). Buettner also discloses introducing said first mixture of molecules to a combinatorial library of solid phase supports (e.g., see figure 1B-1C wherein Ab^{TP} and Ab*Enz are introduced to a combinatorial library of solid supports represented by X_1-X_6). Buettner also discloses incubating said combinatorial library with said first mixture of molecules (e.g., see figure legend 1 B-C; see also Example). Buettner discloses performing a first marking step to mark those of said solid phase supports that have a molecule of said first mixture bound to them (e.g., see figure 1D wherein beads with Ab*Enz are "marked" with a blue dye). Buettner et al. also discloses introducing a target mixture of molecules to said combinatorial library (e.g., see figure 1E-G wherein TP, Ab^{TP} and Ab*Enz are introduced as the "target mixture" of molecules). Buettner also discloses incubating said combinatorial library with said target mixture of molecules (e.g., see figure legend 1E-G; see also Example). Buettner also discloses obtaining a first image showing as marked those of said solid phase supports that have a molecule of said first mixture bound to them (e.g., see figure 1D wherein beads that have the first mixture bound to them are marked with a "blue" dye). Buettner further discloses performing a second marking step

to mark those of said solid phase supports that have a molecule of said target mixture bound to them and obtaining a second image showing as marked those of said solid phase supports that have a molecule of said target mixture bound to them (e.g., see figure 1H wherein the use of a second substrate to mark the target mixture red is disclosed). Finally, Buettner discloses creating a third image identifying those of said solid phase supports that have a molecule of said target mixture bound to them, wherein said third image is created by comparing said first image and said second image (e.g., see figure 6 wherein the identity of the YANKGY sequence was confirmed as a ligand for Factor IX zymogen was confirmed. This third western blot "image" was created, in part, by a comparison of the two prior "dissecting microscope" images because the YANKGY sequence used in the third image could only be obtained by hand picking the "red" beads from the second marking step (i.e., the second image) as compared to the "blue" beads which were produced in the first marking step (i.e., the first image)).

Buettner also discloses isolating one of said solid phase supports identified in said third image; and determining the chemical structure of a ligand on one of said isolated solid phase supports (e.g., see column 10, Example, "Individual stained beads were hand picked with a pipette under a dissecting microscope. Of the 6 beads isolated from two independent analyses, two beads gave a clear sequence (YANKGY and YNYFNQ). The amount of peptide per bead was found to be approximately 10 pmoles (0.1 meq/g), which is sufficient for sequencing").

For ***claim 4***, Buettner discloses a one-bead-one-compound peptide library (e.g., see Example wherein a Hexamer peptide library is disclosed).

For ***claim 7***, Buettner discloses the use of an antigen and corresponding antibody (e.g., see figure 1C wherein Ab*Enz, which reacts with the AbTP antigen, is disclosed).

For ***claim 8***, Buettner discloses the use of BCIP (e.g., see column 8, last paragraph).

For ***claim 9***, Buettner discloses immobilizing said combinatorial library in a support matrix before said first image is obtained (e.g., see figure 1A legend wherein the combinatorial library beads are immobilized on a column support).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 1-9, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buettner (EP 0742438 A2) (Date of Patent is **November 13, 1996**) (5/29/03 IDS) and Lam et al. (Lam, K. S.; Wade, S.; Abdul-Latif, F.; Lebl, M. "Application of a dual color detection scheme in the screening of a random combinatorial peptide library" Journal Immunological Methods **1995**, *180*, 219-223) and Lam (Lam, K. S. "Application of combinatorial library methods in cancer research and drug discovery" Anti-Cancer Drug Design **1997**, *12*, 145-167) (12/13/02 IDS, Reference #3).

For ***claims 1, 2, 4, 7-9, 12 and 15***, Buettner teach all the limitations stated in the 35 U.S.C. 102(b) rejection above (incorporated in its entirety herein by reference), which anticipates and, as a result, renders obvious claims 1, 2, 4, 7-9, 12 and 15.

The prior art teaching of Buettner differs from the claimed invention as follows:

For ***claim 3***, Buettner fails to teach the use of protein extract from cancer cells.

For ***claim 5***, Buettner fails to teach the use of biotinylation.

For ***claim 6***, Buettner fails to teach the use of streptavidin-alkaline phosphatase conjugates.

However, Lam et al. teach the following limitations that are deficient in Buettner:

For ***claim 3***, Lam teaches the use of one-bead one-compound peptide library for cancer screening (e.g., see abstract).

For ***claim 5***, Lam et al. (see entire document) teach the use of biotinylation (e.g., see figure 1 wherein biotinylated anti-β-endorphin is disclosed).

For ***claim 6***, Lam et al. teaches the use of streptavidin-AP (e.g., see figure 1).

It would have been *prima facie* obvious to one skilled in the art at the time the invention was made to use the biotin/streptavidin linkage as taught by Lam et al. with the as a detection system in the method as taught by Buettner because Buettner explicitly states that streptavidin detection systems are within the scope of their invention as being "functionally equivalent" (e.g., see Buettner, columns 11 and 12, It can be further appreciated by those skilled in the art that the invention can easily be extended to use different reagents which are functionally equivalent ... the target injection would be streptavidin conjugated to phosphatase"). Furthermore, one of ordinary skill in the art would have been motivated to use the streptavidin conjugated to phosphatase because it permits the use of BCIP/NBT labeling reagents that are "very sensitive" and also allow the assay to be run "in a much shorter time" than other assays (e.g., see Lam et al., page 222, column 1, last paragraph). In addition, the use of alkaline phosphatase does not interact adversely with the assay (e.g., see Lam et al., page 22, column 1, last paragraph). Furthermore, a person of skill in the art would have been motivated to use cancer extracts because Lam explicitly states "[b]y applying combinatorial chemistry ... to many cancer targets that have recently been identified ... more specific and less toxic anti-cancer agents will be developed"). Finally, one of ordinary skill in the art would have reasonably expected to be successful because both Buettner and Lam et al. teach that streptavidin/phosphatase conjugates and Buettner explicitly states that it would be "easy" to use these functionally equivalent reagents (e.g., see Buettner, column 11, last paragraph). In addition, Lam outlines several successful examples of using combinatorial chemistry in cancer research (e.g., see Lam, Summary; see also Perspectives).

Allowable Subject Matter

16. Claims 10, 11, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jon D Epperson whose telephone number is (571) 272-0808. The examiner can normally be reached Monday-Friday from 9:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Wang can be reached on (571) 272-0811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jon D. Epperson, Ph.D.
November 21, 2005